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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/820,881

Applicant(s)

LEE, KWANG-YONG

Examiner

BRETT RUSTEMEYER

Art Unit

2426

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/09/2004 (New Application).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

a. Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to comply with the antecedent basis requirement. There is insufficient antecedent basis for the following limitations within their respective claims.

- i. Claim 4 recites the limitation "the USB port".
- ii. Claim 5 recites the limitations "the USB connector" and "the USB external connection terminal".

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (*See MPEP Ch. 2141*)

- a. Determining the scope and contents of the prior art;
- b. Ascertaining the differences between the prior art and the claims in issue;
- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

3. Claims 1-10, 13-21, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number "US 6,804,300 B1" invented by Hoshino et al., hereinafter "Hoshino", in view of United States Patent Application "US 2002/0057893 A1", invented by Wood et al., hereinafter "Wood".

Regarding claim 1,

Hoshino discloses of an audiovisual rendering apparatus for use with a notebook personal computer (PC), which is capable of receiving, recording, and reproducing broadcast television signals (*Hoshino*, [Col. 2, L24-L29]). According to one embodiment, a digital video box (DVB) is connected through an adaptor interface and a PCMCIA card to the notebook PC (*Hoshino*, FIG. 1, [Col. 10, L2-L10]). The DVB includes a main board which comprises a television tuner, a video encoder/decoder, an audio codec, and a plurality of audio and video signal I/O connections (*Hoshino*, [Col. 10, L11-L24]). The television tuner receives a television broadcast radio wave input from the television antenna terminal, performs a channel selection and demodulation in accordance with control instructions, outputs a television video signal to the video A/D converter, and outputs a television audio signal to an audio processor (*Hoshino*, FIG. 4, [Col. 11, L56-L62]). The video A/D converter converts an input video signal to a digital signal which is output to the buffer circuit (*Hoshino*, [Col. 11, L64-L66]). Similarly, the audio processor separates an audio signal output from the television tuner into television audio signals (L)/(R) which are input to an audio A/D-D/A converter (*Hoshino*, [Col. 12, L4-L6]). The audio A/D-D/A converter converts an input audio signal to a digital signal which is output to the buffer

circuit (*Hoshino*, [Col. 11, L9-L11]). The resulting television and audio signals are sent through the PCMCIA to the personal computer for further processing and display (*Hoshino*, [Col. 13, L61-L68]). In the alternative form, the resulting television and audio signals are sent through radio communication units (e.g., Bluetooth, IR), bus connection means (e.g., IEEE1394), or connection units (e.g., SCSI, USB) - (*Hoshino*, [Col. 23, L36-L43]).

Thus, Hoshino reads on:

a TV signal receiving module, the TV signal receiving module comprising:

a tuner receiving an analog signal and separating the analog signal into a video signal and an audio signal;

a video decoder converting the video signal of the analog signal into a digital video stream;

an audio decoder converting the audio signal into a digital audio stream; and

a network connecting part (Inherent processing device of PCMCIA, Bluetooth, IR, IEEE1394, SCSI, or USB) converting a format of the second data stream for the portable computer.

While Hoshino discloses the television signal and audio signal sent to the PCMCIA card and personal computer for MPEG-2 compression by the video compression IC (*Hoshino*, [Col. 13, L61-L66]) and the audio encoder (*Hoshino*, [Col. 13, L46-L52]), respectively, Hoshino is silent on *the TV signal receiving module comprising: an encoding engine encoding the digital video and audio streams into a second data stream*. However, in an analogous art related to problems associated with digital recording and playback, Wood provides evidence regarding the

signal processing of broadcast data. In particular, the reference teaches of a digital VCR comprising: a tuner operable to receive a selected channel of a NTSC broadcast (*Wood*, FIG. 2, [0020]-[0021]); a NTSC decoded operable to digitize the selected video signal (*Wood*, [0021]); a MPEG-2 encoder operable to compress the digitized video signal (*Wood*, [0022]); a codec operable to digitize the selected audio signal(s) (*Wood*, [0025]); and a DSP operable to compress the received digitized audio signal using MPEG-2 compression (*Wood*, [0026]).

Thus, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply the technique of digitizing and compressing the audiovisual contents prior to external distribution as disclosed by *Wood*, to improve processing capabilities of the digital video box of *Hoshino*, for the predictable result of providing a broadcast reception device which does not rely upon external processing, thereby accommodating a greater number of external devices. Therefore, the combined teaching of *Hoshino* and *Wood*, as a whole, disclose: *the TV signal receiving module comprising: an encoding engine encoding the digital video and audio streams into a second data stream.*

Regarding claim 2, the TV signal receiving module as recited in claim 1, wherein the TV signal receiving module is connected to a portable computer through a USB connector or a USB external connection terminal (*Hoshino*, [Col. 23, L36-L43]) is disclosed by the combined teaching of *Hoshino* and *Wood*, as a whole.

Regarding claim 3,

While the modified DVB, as disclosed by the combined teaching of Hoshino and Wood, as a whole, receives a variety of television broadcast signals (e.g., cable, satellite) and various signals from other external devices (e.g., composite video, S-video, and RCA audio inputs) - (*Hoshino*, [Col. 10, L11-25]), their combined teaching fails to disclose a TV signal receiving module comprising: *a tuner operable to receive a digital signal and convert the digital signal into a MPEG-2 transport stream*. However, Official Notice is taken that both the concept and advantage of providing *a tuner operable to receive a digital signal and convert the digital signal into a MPEG-2 transport stream* was notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the combined teaching of Hoshino and Wood for the benefit of further improving processing capabilities of the modified DVB in order to accommodate rendering protocol for a greater number of external devices.

While the modified DVB, as disclosed by the combined teaching of Hoshino and Wood, as a whole, discloses encoding the digital and audio streams according to the MPEG-2 compression standard (*Wood*, [0020]-[0025]), their combined teaching is silent to disclose that said encoding results in one or more MPEG-2 program streams. However, Official Notice is further taken that both the concept and advantage of encoding the digital video and audio streams into a *MPEG-2 program stream* was notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the combined teaching of Hoshino and Wood for the benefit of further improving processing capabilities of the modified digital video box in order to accommodate rendering protocol for a greater number of external devices.

Therefore, the modified teaching of Hoshino and Wood, as a whole disclose the limitation as a whole.

Regarding claims 4 and 5,

While the modified DVB, as disclosed by the combined teaching of Hoshino and Wood, as a whole, provides the resulting television and audio signals to the computer via an USB connection, their combined teaching fails to disclose the claimed network connecting part as described in claims 4 and 5. However, Official Notice is taken that both the concept and advantage of providing *a USB hub interface comprising one or more controllers for transmitting data one or more respective data rates through a USB connection to a PC* in an external device (such as the modified digital video box of Hoshino and Wood) was notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the combined teaching of Hoshino and Wood for the benefit of further improving processing capabilities of the modified digital video box in order to accommodate rendering protocol for a greater number of external devices.

Regarding claim 6, the combined teaching of Hoshino and Wood, discloses a TV signal receiving module as recited in claim 1, wherein the audio and video D/A convert the video signal and the audio signal into a CVBS (composite video burst sync) signal (*Hoshino*, FIG.1, [Col. 11, L66] - [Col. 12, L3] - Element 14,) and a 2nd IF (intermediate frequency) signal (*Hoshino*, FIG. 1, [Col. 12, L4-L6] - Element 65), respectively. The combined teaching of Hoshino and Wood, as a whole, fail to disclose that the tuner comprises the audio processor and video D/A converter

for processing their respective signals. However, the Examiner contests that the act of including the audio processor and D/A converter, for processing audio and video signals, within a tuner device, would have been an obvious design choice requiring only routine skill in the art, at the time of the invention, for the benefit of reducing the number of leads on a circuit board, thereby resulting in less EMI. It has been held that forming one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art (*Howard v. Detroit Stove Works*, 150 U.S. 164 (1893)).

Regarding claim 7, the TV signal receiving module as recited in claim 6, further comprising:

an ADC (analog/digital converter) – (*Hoshino*, FIG. 4: Element 66), wherein the audio decoder converts the 2nd IF signal (i.e., television audio signals (L) and (R)) received from the tuner into the digital audio stream and transmits the digital audio stream to the encoding engine through the ADC is disclosed by the modified teaching (*Hoshino*, [Col. 12, L4-L6]) – (*Wood*, [0025]-[0026]) of *Hoshino* and *Wood*, as a whole.

Regarding claim 8, the modified teaching of *Hoshino* and *Wood*, as a whole fail to disclose *the video decoder, the audio decoder, the ADC, the encoding engine, the network connecting part are integrated circuits or chips*. However, Examiner contests that the act of implementing the claimed components as integrated circuits within a tuner device would have been an obvious design choice requiring only routine skill in the art, at the time of the invention, for the benefit of utilizing advanced manufacturing processes, thereby resulting in reduced costs and increased performance with respect to discrete components. It has been held that forming one piece an

article which has formerly been formed in two pieces and put together involves only routine skill in the art (*Howard v. Detroit Stove Works, 150 U.S. 164 (1893)*).

Regarding claim 9, the buffer circuit (*Hoshino*, FIG. 4 - Element 61) of Hoshino reads on:

a memory storing the digital video and audio streams of a picture to be displayed on a display part of the portable computer.

Therefore, the combined teaching of Hoshino and Wood, disclose the limitation, as a whole (*Hoshino*, [Col. 11, L64] - [Col. 12, L11]).

Regarding claim 10, any of the external connections (PCMCIA, Bluetooth, IR, IEEE1394, SCSI, or USB) through which the resulting television and audio signals are sent to the computer, disclosed by Hoshino, read on:

the TV signal receiving module is connected to the portable computer without being inserted into a slot of a main board.

Therefore, the combined teaching of Hoshino and Wood, disclose the limitation as a whole (*Hoshino*, [Col. 13, L61-L68], [Col. 23, L36-L43]).

Regarding claim 13, the combined teaching of Hoshino and Wood, as a whole, fail to disclose that TV signal receiving module is smaller than a battery. However, the Examiner contests that the act of altering the size of the tuning module would have been an obvious design choice to one of ordinary skill in the art, at the time of the invention. For instance, the mere act of designing the size of the tuning module, such that the tuning module is smaller than a standard 12V

automobile battery would provide the additional benefit increased space for the user. A change in size is generally recognized as being within the level of ordinary skill in the art (*In re Rose*, 105 USPQ 237 (CCPA 1995)).

Regarding claim 14, the TV signal receiving module as recited in claim 1, wherein the portable computer further comprises a USB port (*Hoshino*, [Col. 14, L46-L52]) and a battery (Inherent feature of a notebook personal computer), and the TV signal receiving module further comprises:

a connector (e.g., male USB adaptor for connecting to the USB port of the portable computer) directly connected to the USB port of the portable computer (*Hoshino*, [Col. 24, L36-L44]); and

a power input terminal (*Hoshino*, FIG. 4: Element 19) supplying electric power to the tuner, the video decoder, the encoding engine, and the network connecting part (*Hoshino*, [Col. 11, L10-L19]).

While Hoshino discloses that information may be transmitted between the digital video box and the notebook personal computer, (*Hoshino*, [Col. 24, L36-L44]), the combined teaching of Hoshino and Wood, as a whole, fails to disclose the detailed inter-working of this relationship. However, Official Notice is taken that both the concept and advantage of providing *a USB to USB cable interface for transmitting data between a PC and an external device* (such as the modified digital video box of Hoshino and Wood) was notoriously well known and expected in the art, and therefore would have been obvious to incorporate in the combined teaching of Hoshino and Wood for the benefit of providing a flexible connection mechanism for transferring data between a notebook personal computer and an external device (e.g., modified DVB).

Thus, the modified teaching of Hoshino and Wood, as a whole disclose:

an external connection terminal (i.e., male USB connector to modified digital video box) indirectly connected to the USB port through a cable

While Hoshino inherently discloses that the notebook personal computer contains one or more USB ports (*Hoshino*, [Col. 24, L36-L44]), the exact location is unknown based upon the combined teaching of Hoshino and Wood, as a whole. However, Examiner contests that the act of changing the location of the USB port would have been an obvious design choice requiring only routine skill in the art, at the time of the invention, for the added benefit of increased the aesthetics and ease of use. It has been held that rearranging parts of an – invention involves only routine skill in the art (*In re Japikse*, 86 USPQ 184).

Therefore, the further modified teaching of Hoshino and Wood, as a whole disclose:

the USB port of the portable computer that is disposed in a bottom of the portable computer and adjacent to a connector to which the battery is connected.

Regarding claim 15, the TV signal receiving module as recited in claim 14, wherein the TV signal receiving module further comprises:

an S-video input terminal (*Hoshino*, FIG. 1: Element 11);

two stereo terminals for the audio signal (*Hoshino*, FIG. 1: Elements 15-18);

a video input terminal (*Hoshino*, FIG. 1: Elements 12), and

a TV signal receiving antenna connected to the tuner, wherein the video decoder is connected to the S-video input terminal and the video input terminal (*Hoshino*, FIG. 1: Element

10, [Col. 11, L56-L66], [Col. 13, L61-L66]) is disclosed by the further modified teaching of Hoshino and Wood, as a whole.

Regarding claim 16, TV signal receiving module as recited in claim 14, wherein the connector (e.g., male USB adaptor for connecting to the USB port of the portable computer) is used as a connection terminal to mount (i.e., connect via a USB cable) the TV signal receiving module to the portable computer (Please refer to the remarks and citations as stated by the Examiner in response to claim 14) is disclosed by the further modified teaching of Hoshino and Wood, as a whole.

Regarding claim 17, the TV signal receiving module as recited in claim 14, wherein, in the portable computer, a TV module connection terminal (e.g., USB port of the portable computer) corresponding to the connector of the TV signal receiving module (e.g., male USB adaptor for connecting to the USB port of the portable computer) is separated from and is adjacent to a battery terminal corresponding to a connector of the battery (the remarks and citations as stated by the Examiner in response to claim 14) is disclosed by the further modified teaching of Hoshino and Wood, as a whole.

Regarding claim 18, the TV signal receiving module as recited in claim 14, wherein pins of the connector (e.g., male USB adaptor for connecting to the USB port of the portable computer) are partly connected to the USB port of the portable computer (e.g., USB data pins) and partly connected to a power pin (e.g., USB power pins) of the portable computer to supply the electric

power through the input terminal (Please refer to the remarks and citations as stated by the Examiner in response to claim 14) is disclosed by the further modified teaching of Hoshino and Wood, as a whole.

Regarding claim 19, the TV signal receiving module as recited in claim 14, wherein the external connection terminal (i.e., male USB connector to modified digital video box) is used when the TV signal receiving module is connected to the USB port of the portable computer through the cable, allowing (i.e., not inhibiting) the portable computer to receive the electric power from the battery (Inherent feature of a notebook personal computer) or from a commercial AC power source (e.g., a power outlet), where the TV signal receiving module receives the electric power from the commercial AC power source (e.g., the same power outlet) through the power input terminal (*Hoshino*, FIG. 4: Element 19, [Col. 11, L10-L19]) is disclosed by the further modified teaching of Hoshino and Wood, as a whole..

Regarding claim 20, the MPEG-2 encoder and the DSP, disclosed by Wood, operable to compress the received digitized audio and video signals according to the MPEG-2 compression standard read on:

wherein the encoding engine is an MPEG (moving picture experts group)-2 encoder.

Therefore, the combined teaching of Hoshino and Wood, disclose the limitation as a whole (*Wood*, [0022], [0026]).

Regarding claim 21, the tuner, of Wood, operable to receive a selected channel of a NTSC broadcast read on:

wherein the tuner is a NTSC compatible tuner.

Therefore, the combined teaching of Hoshino and Wood, disclose the limitation as a whole (*Wood*, FIG. 2, [0020]-[0021]).

Regarding claim 25, an operating method of a TV signal receiving module connected to a portable computer through a USB (universal serial bus) port, the operating method comprising:

receiving an analog or a digital signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claims 1 and 3);

separating the analog signal into a video signal and an audio signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1);

converting the digital signal into a first data stream (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 3);

converting the video signal and the audio signal into a digital video stream and a digital audio stream, respectively (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1);

encoding the digital video and audio streams into a second data stream (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claims 1); and

converting a format of the first data stream or the second data stream for the portable computer (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claims 1 and 3) is disclosed by the modified teaching of Hoshino and Wood, as a whole.

Regarding claim 26, the method of the TV signal receiving module as recited in claim 25, wherein the first data stream comprises an MPEG-2 transport stream and the second data stream comprises an MPEG-2 program stream (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 3) is disclosed by the modified teaching of Hoshino and Wood, as a whole.

Regarding claim 27, the method of the TV signal receiving module as recited in claim 25, wherein because the TV signal receiving module is connected to the portable computer, not through a PCI interface, but through the USB port, further comprising:

recognizing (e.g., initiates) the TV signal receiving module while the portable computer operates (*Hoshino*, [Col. 12, L29-L41]) is disclosed by the modified teaching of Hoshino and Wood, as a whole.

Regarding claim 28, a portable computer having a TV signal receiving module which includes a tuner to receive an analog TV signal and a digital TV signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claims 1 and 3);

a video decoder to receive and process a video signal divided from the analog TV signal received by the tuner so as to display a picture based on the video signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1);

an encoding engine to encode the video signal processed in the video decoder having a predetermined format (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1);

a memory to store the encoded video signal having the predetermined format (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 9); and

a network connecting part to control the digital TV signal and the encoded video signal to be transmitted to the portable computer (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1) is disclosed by the modified teaching of Hoshino and Wood, as a whole.

Regarding claim 29, The TV signal receiving module as recited in claim 28, wherein the portable computer further comprises:

a TV module connection terminal (e.g., USB port of the portable computer) to which the TV signal receiving module is connected, wherein the TV module connection terminal is separated from and adjacent to a battery terminal to which the battery is connected (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 17) is disclosed by the further modified teaching of Hoshino and Wood, as a whole.

Regarding claim 30, The TV signal receiving module as recited in claim 28, wherein the TV signal receiving module is connected to the portable computer through the TV module connection terminal to transmit the TV signal to the portable computer (*Hoshino*, [Col. 12, L29-L41]) is disclosed by the modified teaching of Hoshino and Wood, as a whole.

4. Claims 11, 12, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino in view of Wood further in view of U.S. Patent Number “5,058,045” invented by Hsi K. Ma, hereinafter “Ma”.

Regarding claim 22,

The combined teaching of Hoshino and Wood, as a whole, disclose a TV signal receiving module for a portable computer having a USB port (*Hoshino*, [Col. 14, L46-L52]) and a battery mounting place (Inherent feature of a notebook personal computer). While the combined teaching of Hoshino and Wood, as a whole, disclose that an expansion card (e.g., PCMCIA) is used to connect the modified digital video box to a notebook personal computer, their combined teaching fails to disclose that the TV signal receiving module (i.e., modified digital video box) *has an external shape that corresponds to a shape of a battery to be mounted to the battery mounting place of the portable computer.*

However, in an analogous art related to problems associated with connecting expansion cards and batteries to notebook computers, Ma provides evidence regarding the interchangeability of expansion card and battery sets. In particular, the reference teaches a

notebook computer may utilize a plurality of receiving chambers, such that battery sets or expansion cards may be universally inserted into the receiving chambers to either extend power supply duration or strengthen the operational function of the computer (*Ma*, Abstract, FIG. 3, [Col. 2, L10-L16]).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention to apply the technique of utilizing the universal cassette-like structure in a notebook personal computer disclosed in *Ma*, to improve the functionality of notebook personal computer disclosed by the combined teaching of Hoshino and Wood, as a whole, for the predictable result of extending the power supply duration of the notebook personal computer when the modified digital video box it is not connected the modified, without sacrifice to the operability of the two devices when connected.

Regarding claim 23, the TV signal receiving module as recited in claim 22, further comprising:

- a tuner receiving an analog TV signal and a digital TV signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claims 1 and 3);

- a video decoder receiving and processing a video signal divided from the analog TV signal so as to display a picture based on the video signal (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1);

- an encoding engine encoding the video signal processed in the video decoder having a predetermined format (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1); and

a network connecting part controlling the digital TV signal and the encoded video signal to be transmitted to the portable computer (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 1) is disclosed by the combined teaching of Hoshino, Wood, and Ma, as a whole.

Regarding claim 24, the TV signal receiving module as recited in claim 23, further comprising:

a connector directly connected to the USB port of the portable computer that is disposed in a bottom of the portable computer and adjacent to a connector to which the battery is connected (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 14);

a power input terminal supplying electric power to the tuner, the video decoder, the encoding engine, and the network connection part (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 14); and

an external connection terminal indirectly connected to the USB port that is disposed in a back section of the portable computer through a cable (Please refer to the remarks and citations, as stated by the Examiner, in response to the respective limitations of claim 14) is disclosed by the further modified teaching of Hoshino, Wood, and Ma, as a whole.

Regarding claims 11 and 12, please refer to remarks and citations provided by the Examiner as stated in response to claim 22.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Okada et al. (U.S. Patent Application Number US 2001/0005448 A1) discloses of a broadcast receiver (i.e., "apparatus") comprising: ; a unit for reading the "random_access_indicator" from the received MPEG transport stream; and an encoder 1904 operable to convert analog or digital television signals into MPEG program streams (*Okada*, [0049], [0162]).

Hoshino et al. (U. S. Patent Application Number US 2003/0115400 A1) discloses that USB cables, which connect the upstream host PC and hub for the peripheral devices (collectively referred to below as "upstream devices") and individual downstream peripheral devices (collectively referred to below as "downstream devices"), comprise four lines: one pair of signal lines (D+ line and D- line) and one pair of power lines (V.sub.cc line and GND line). At the point in time at which the upstream devices are connected to the downstream devices with a USB cable, it becomes possible for power to be supplied from the upstream devices to the downstream devices via the power lines (*Hoshino*, [0006]).

Contact

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett Rustemeyer whose telephone number is (571) 270-1849. The examiner can normally be reached on Mon. - Thurs. 6:30 a.m.-5 p.m. EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava

can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/BR/

Examiner - Art Unit 2426

December 12th, 2008

/Annan Q Shang/

Primary Examiner, Art Unit 2424